

Coriolis Mass Flow Meter

Model: MDCM1

Product Features

Multi-functional

Can simultaneously measure flow, density, temperature and other field variables, the transmitter has two separately configurable output signal, can be used to display the flow, density, temperature and other measurement values, a mass flow meter can replace multiple measuring instruments.

Direct measurement of the mass flow of fluid

eliminating the problem of volumetric flow measurement.

High accuracy.

For liquid large can reach $\pm 0.1 \pm (\text{stability of the zero point / actual flow}) \times 100\%$, gas can reach $\pm 0.25 \pm (\text{stability of the zero point / actual flow}) \times 100\%$.

Wide range ratio

up to 100:1, the low-frequency sensor limit can reach 1000:1.

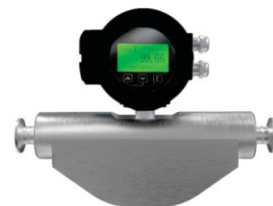
Long service life and low maintenance.

No obstructions in the pipeline, no moving parts, few failure factors, easy installation and maintenance.

Self-diagnostic function

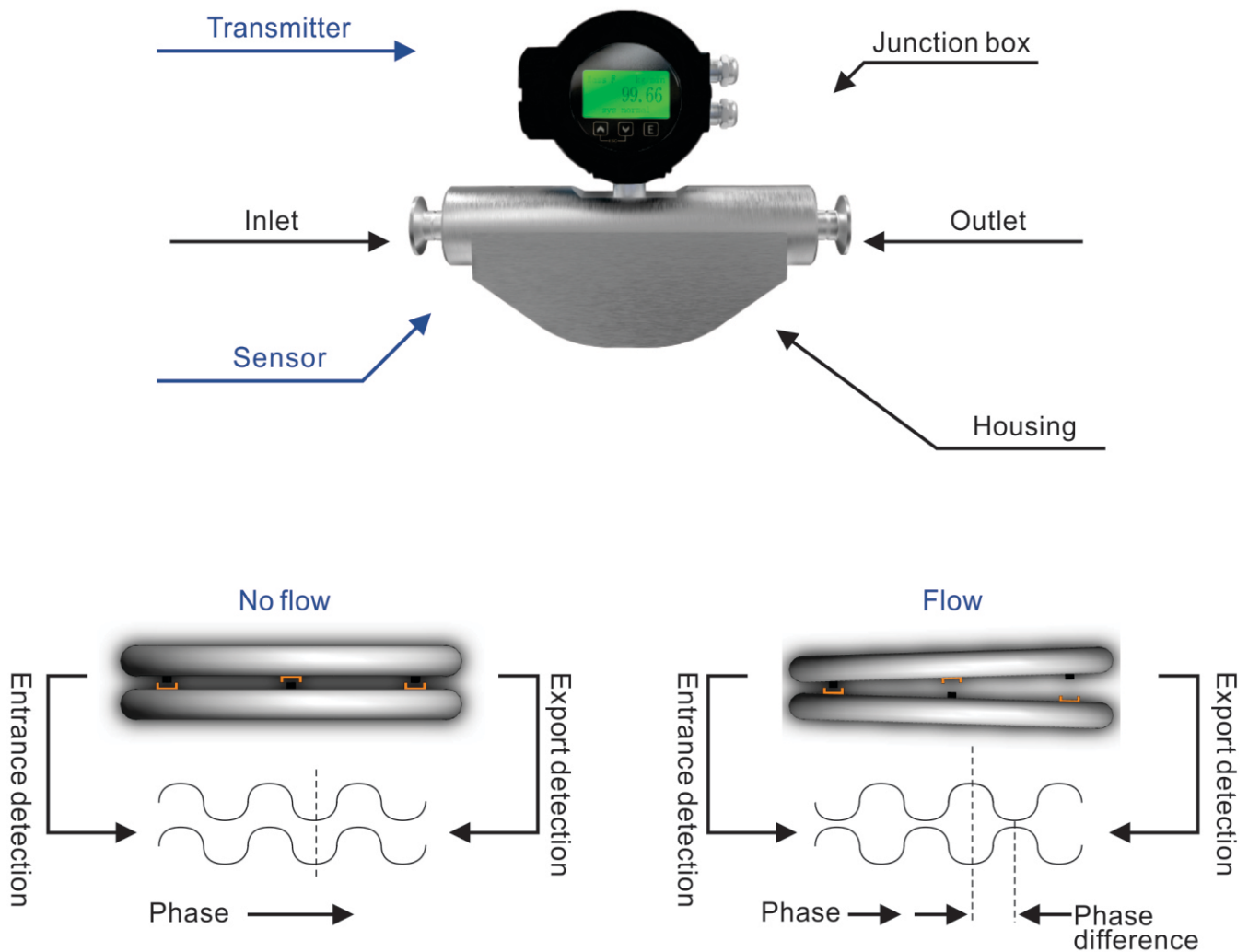
Strong circuit self-diagnostic function for easy fault finding.

Adjustable damping time.



Measuring Principle

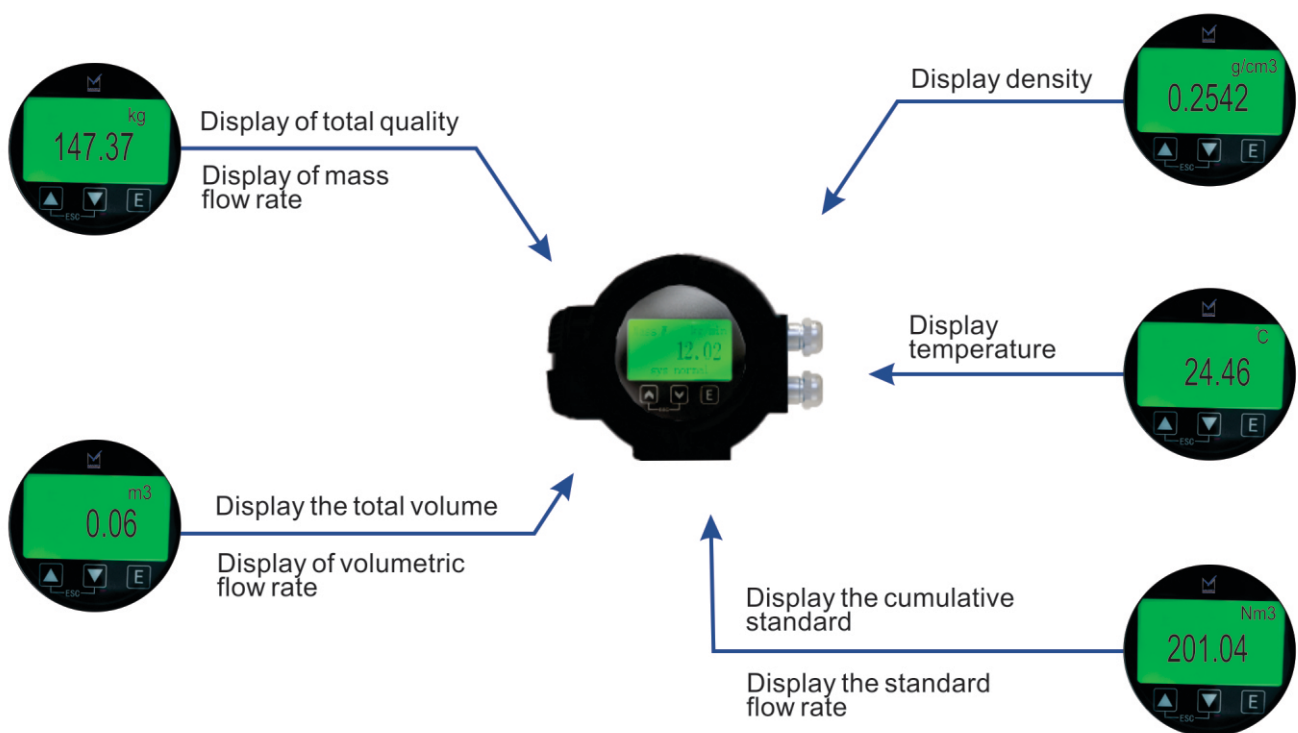
Coriolis mass flowmeter, according to the principle of Coriolis, let the meter tube vibrate when there is a medium passing through. Sensor detects and analyzes the change of frequency, phase difference and temperature of the meter tube. So that it can directly measure the mass flow-rate of the medium, and density is calculated by vibrate frequency. Other process variables also can be obtained, like mass flow, volume flow, density and temperature.



Transmitter

A transmitter is an intelligent control system composed of DSP and ARM as the core to achieve accurate measurement of mass flow rate, density, and temperature.

And it adopts a high-performance microprocessor, LCD display screen, and parameter setting is convenient and fast, and has self checking and self diagnostic functions.



Application

CHEMICALS
OIL AND GAS
ELECTRONICS AND SEMICONDUCTORS
LITHIUM BATTERY
PHOTOVOLTAIC
FILLING MACHINES
PHARMACEUTICALS
FOOD AND BEVERAGE
FUEL CELLS
LIFE SCIENCES

The Coriolis mass flowmeter can directly measure the mass flow rate of fluids, and the measurement results are not affected by the characteristics of medium density, temperature, pressure, flow velocity distribution, etc. It has the characteristics of high measurement accuracy, good stability, convenient use, small maintenance, strong communication function, and can achieve multi parameter measurement.

Industry	Applicable Medium	Industry	Applicable Medium	
Gas metering	CNG/LNG metering	The food industry	Palm oil metering	
	Gas metering		Drink measurement	
	Chlorine metering		Peanut oil metering	
	Industrial gas measurement		Edible oil metering	
	Measurement of Carbon dioxide		Flavorants metering	
	Other gases		Blended oil metering	
The oil industry	LPG metering	The chemical industry	Chemical applications	
	Fluid metering petrochemical plant		Liquid paraffin metering	
	Oil production plant		Measurement of chemical raw materials	
	Supporting the use of metering skid		Methanol metering	
	Wells auxiliary material		Hydrogen peroxide metering	
	Loading/unloading of crude oil and refined oil		Metering fertilizer plant resin	
Shipbuilding industry	Measurement of marine oil		Measurement of highly corrosive fluids such as nitric acid, sulfuric acid, hydrochloric acid, and strong alkali.	
Pharmaceutical	Trimethylamine metering			Xylene metering
	Pharmaceutical and Chemicals			Measurement of agricultural raw materials
	Concoction measurement			
Lithium battery industry	Electrolyte production, storage and transportation, injection	Photovoltaic industry	Photovoltaic polycrystalline silicon hydrogen gas	
Building materials industry	High viscosity resin metering		SiHCl3	
	Coating measurement		SiCl4	
Other industries	Metallurgical industry , Paper industry , Refrigeration industry			

Technical indicators Performance parameters**General technical indicators**

Accuracy	$\pm 0.15\%$ Flow rate , $\pm 0.2\%$ Flow rate , $\pm 0.5\%$ Flow rate , $\pm 1.0\%$ Flow rate
Repeatability	0.075% Flow rate , 0.1% Flow rate , 0.25% Flow rate , 0.5% Flow rate
Density Accuracy	$\pm 0.001\text{g/cm}^3$ ($\pm 1\text{kg/m}^3$)
Temp. Accuracy	$\pm 1^\circ\text{C}$ or $\pm 0.5\% \times \text{Test value}$
Temp. Repeatability	0.2°C
Relative humidity	$\leq 95\%$
MAX Working pressure of flow tube	1.6MPa、4MPa、6.3MPa、10MPa、16MPa、20MPa、25MPa、 30MPa、35MPa、40MPa、45MPa、70MPa、90MPa、120MPa
Power supply	24VDC、220VAC/24VDC Self-adaption
Electrical interface	1/2 NPT、M20*1.5
Explosion-proof marking	Ex d ib IIC T6 Gb ; Ex db ia IIC T6 Gb,Ex tb ia IIC T80°C Db
Protection level	IP66、IP67

Zero Stability

Model	Zero stability (kg/min)
MDCM1-001	0.0002
MDCM1-002	0.0005
MDCM1-003	0.001
MDCM1-004	0.001
MDCM1-008	0.002
MDCM1-015	0.006
MDCM1-020	0.010
MDCM1-025	0.010
MDCM1-040	0.020
MDCM1-050	0.025
MDCM1-080	0.050
MDCM1-100	0.100
MDCM1-150	0.200
MDCM1-200	0.300
MDCM1-250	0.750

High pressure series

- Nominal diameter (mm): DN01, DN02, DN03, DN04, DN08, DN15, DN25 .
- Excellent performance of small flow rate measurement, meet fuelling or measuring demand for hydrogen and other high pressure gas.
- Have done the test at 1.5 times of the rated pressure, to ensure reliability and security under super pressure.
- Smooth tube without other components. There is no additional pressure loss during measuring process.
- The components of contacting medium are made of composite metal materials with excellent resistant performance to hydrogen embrittlement.

Application

It is suitable for high pressure gas metering, hydrogen/CNG metering platforms, etc.

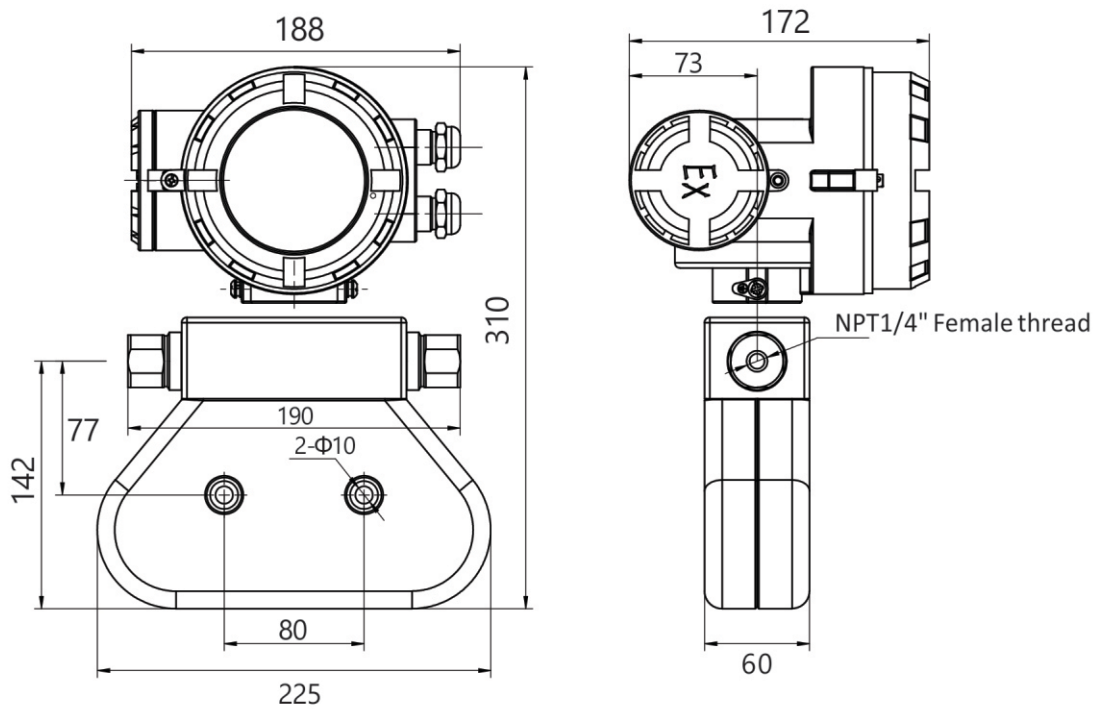
Model and Diameter

Model	Nominal diameter inch mm		Medium temp.	Max.W.P
MDCM1-001	1/12"	DN01	-50°C~ +150°C	≤45MPa
MDCM1-002	1/10"	DN02	-50°C~ +150°C	≤20MPa
MDCM1-003	1/8"	DN03	-50°C~ +150°C	≤90MPa
MDCM1-004	1/6"	DN04	-50°C~ +150°C	≤35MPa
MDCM1-008	1/4"	DN08	-50°C~ +150°C	≤30MPa
MDCM1-015	1/2"	DN15	-50°C~ +150°C	≤45MPa
MDCM1-025	1"	DN25	-50°C~ +150°C	≤45MPa

Overall Dimension

(unit : mm)

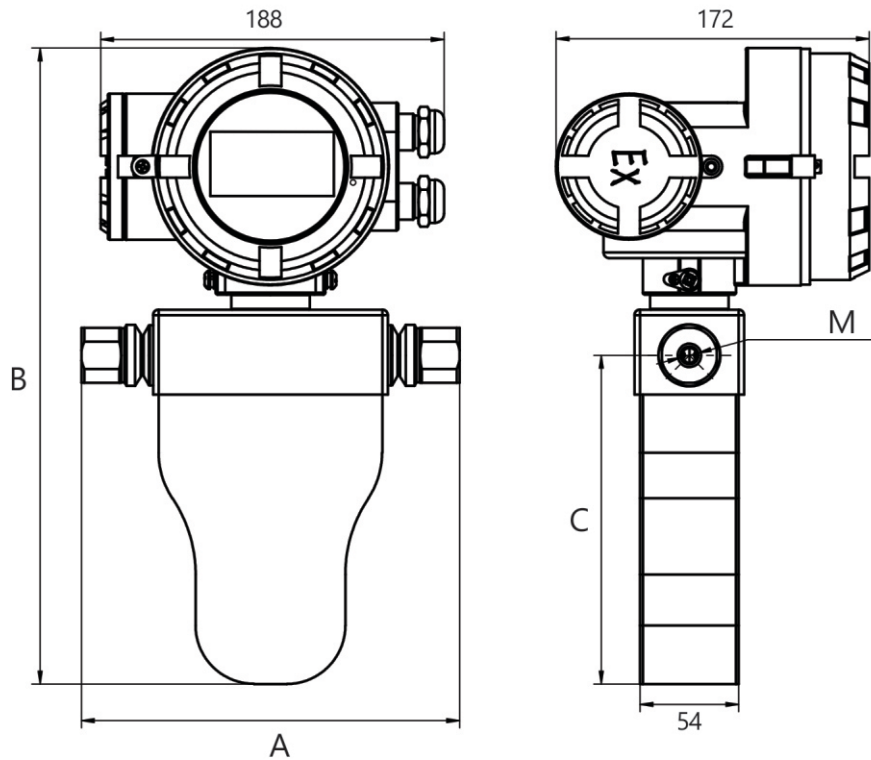
Model:MDCM1-001/MDCM1-002



Overall Dimension

(unit : mm)

Model:MDCM1-003/MDCM1-004/MDCM1-008/MDCM1-015

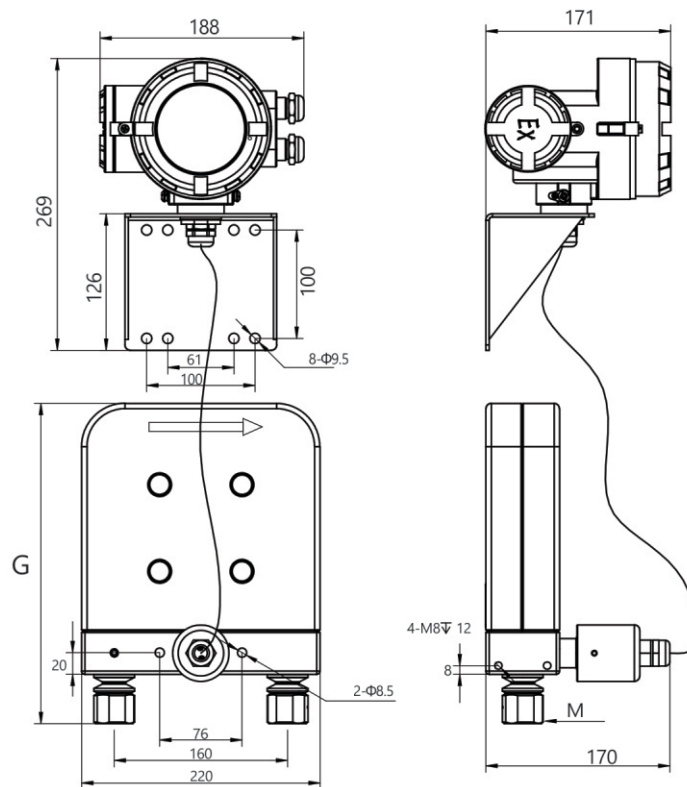


Model	A	B	C	Max.W.P	M
MDCM1-003	207	348	180	≤45MPa	NPT1/4" Female thread
MDCM1-004	207	348	180	≤30MPa	NPT1/4" Female thread
MDCM1-008	218	325	157	≤45MPa	13/16-16UNF Female thread
MDCM1-015	206	348	180	≤30MPa	G3/4" Female thread

Overall Dimension

(unit : mm)

Model:MDCM1-003/MDCM1-004/MDCM1-008/MDCM1-015

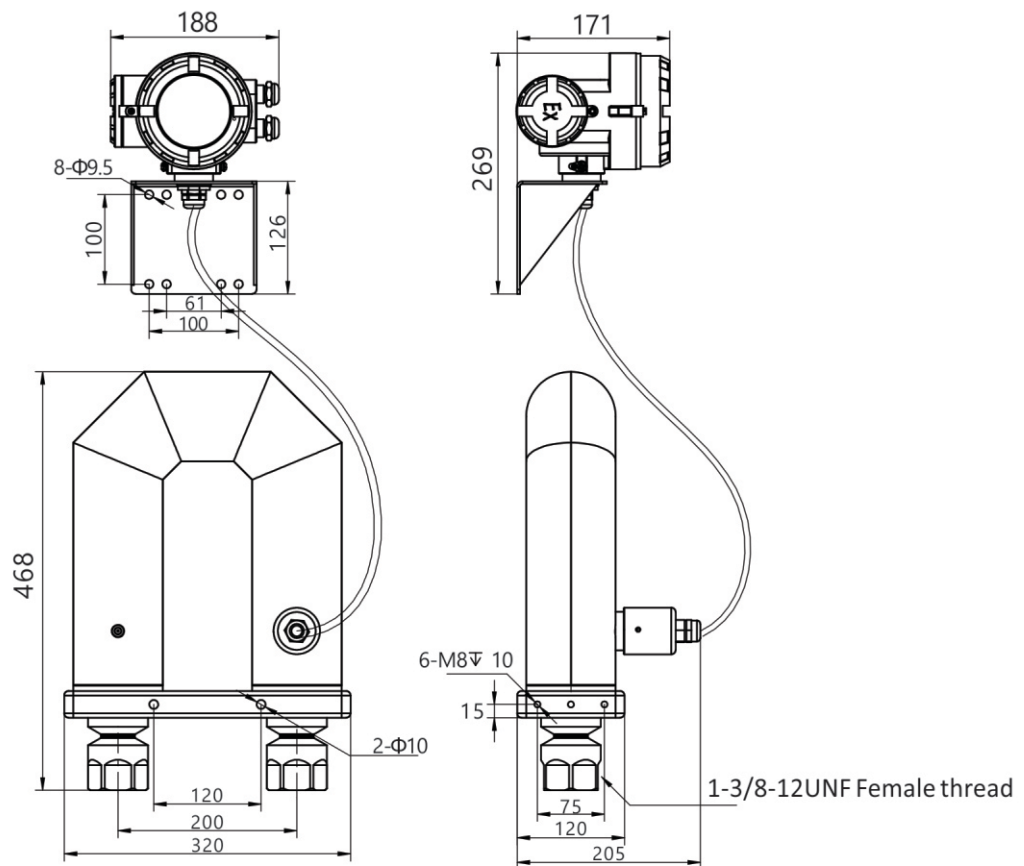
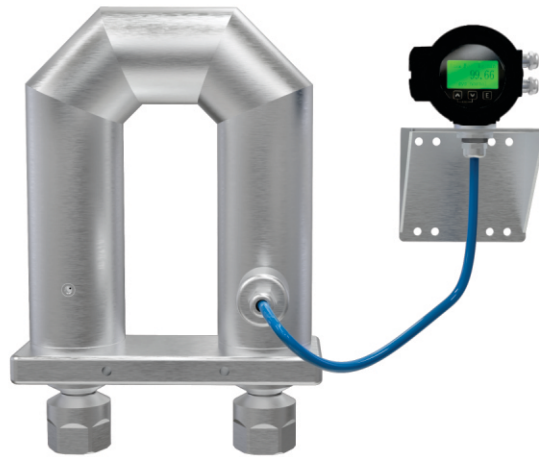


Model	G	Max.W.P	M
MDCM1-003	275	≤90MPa	9/16-18 UNF Female thread
		≤50MPa	
		≤40MPa	
MDCM1-004	275	≤35MPa	9/16-18 UNF Female thread
MDCM1-008	296	≤30MPa	3/4 Card sleeve
		≤45MPa	13/16-16 UNF Female thread
		≤30MPa	3/4 Card sleeve
MDCM1-015	296	≤45MPa	13/16-16 UNF Female thread

Overall Dimension

(unit : mm)

Model:MDCM1-025



Cryogenic series

- Nominal diameter (mm): DN08,DN25,DN40,DN50,DN80.
- High sensitivity.
- Accurate and stable measurement is implemented by the high precise digital signal process.
- Compact design, small size, reliable performance, longer service life.

Application

Specially designed for chemical energy, natural gas field and cryogenic application environment.

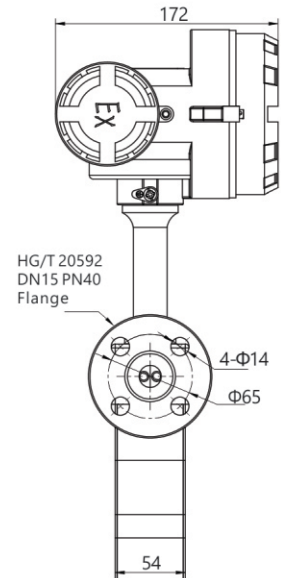
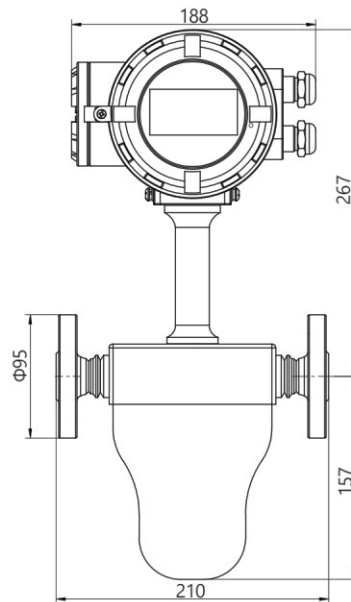
Model and Diameter

Model	Nominal diameter		Medium temp.	Max.W.P	Max. flow-rate	
	inch	mm			kg/min	Lb/min
MDCM1-008	1/4"	DN08	-200°C~+150°C	≤4MPa	20	44
MDCM1-025	1"	DN25	-200°C~+150°C	≤4MPa	200	440
MDCM1-040	1-3/4"	DN40	-200°C~+150°C	≤4MPa	450	992
MDCM1-050	2"	DN50	-200°C~+150°C	≤4MPa	650	1433
MDCM1-080	3"	DN80	-200°C~+150°C	≤4MPa	2000	4409

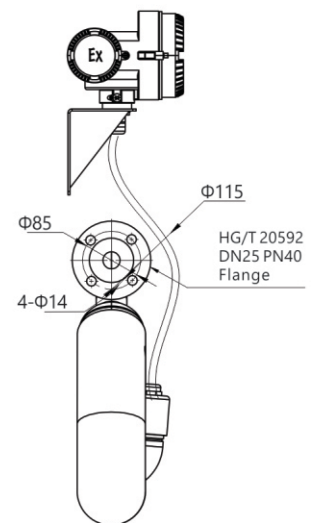
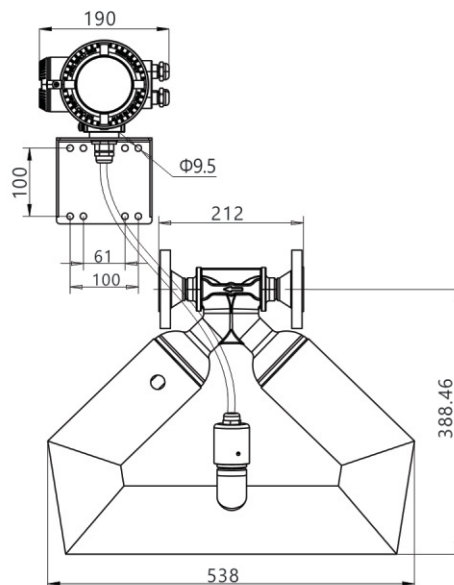
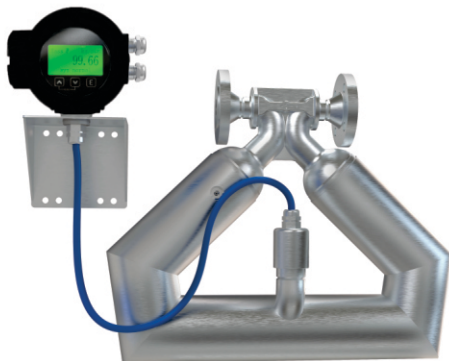
Overall Dimension

(unit : mm)

Model:MDCM1-008



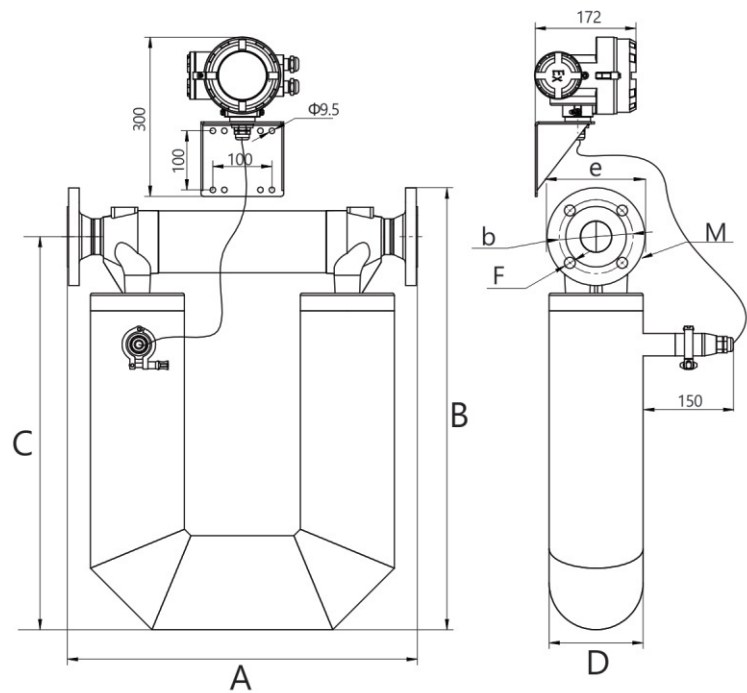
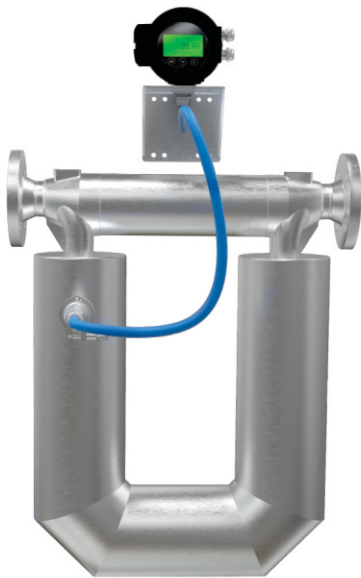
Model:MDCM1-025



Overall Dimension

(unit : mm)

Model:MDCM1-040/MDCM1-050/MDCM1-080



Model	A	B	C	D	e	b	F	M
MDCM1-040	560	699	624	Φ140	Φ150	Φ110	Φ18	HG/T 20592 DN40 PN40 Flange
MDCM1-050	592	747	665	Φ159	Φ165	Φ125	4-Φ16	HG/T 20592 DN50 PN40 Flange
MDCM1-080	763	950	850	Φ219	Φ200	Φ160	8-Φ18	HG/T 20592 DN80 PN40 Flange

Conventional series

Nominal diameter (mm):

DN01, DN02, DN03, DN04, DN08, DN15, DN20, DN25, DN40, DN50, DN80, DN100, DN150, DN200, DN250.

Not affected by physical properties such as viscosity and density of liquid.

Integrated design, small size, easily installed.

Application

It is suitable for trade handover and process control of loading and unloading materials in petrochemical, metallurgical, electric power, paper making, semiconductor, etc.

Model and Diameter

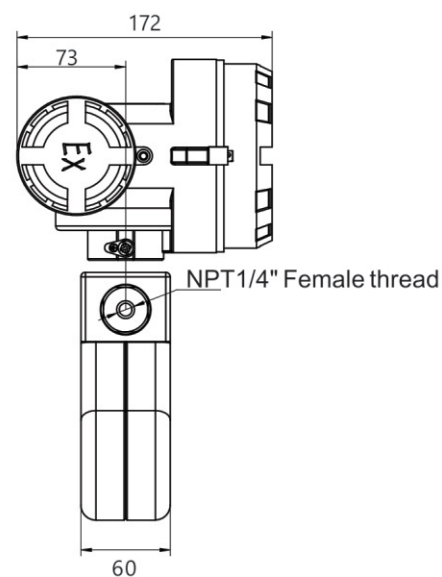
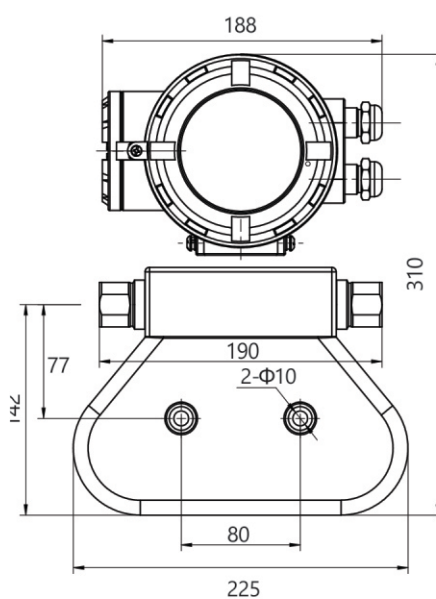
Model	Nominal diameter		Medium temp.	Max.W.P	Max. flow-rate	
	inch	mm			kg/min	Lb/min
MDCM1-001	1/12"	DN01	-50°C~+150°C	≤10MPa	0.2	0.44
MDCM1-002	1/10"	DN02	-50°C~+150°C	≤10MPa	1.6	3.53
MDCM1-003	1/8"	DN03	-50°C~+150°C	≤10MPa	3	6.61
MDCM1-004	1/6"	DN04	-50°C~+150°C	≤10MPa	5	11
MDCM1-008	1/4"	DN08	-50°C~+150°C	≤10MPa	20	44
MDCM1-015	1/2"	DN15	-50°C~+150°C	≤10MPa	60	132
MDCM1-020	3/4"	DN20	-50°C~+150°C	≤10MPa	100	220
MDCM1-025	1"	DN25	-50°C~+150°C	≤10MPa	200	440
MDCM1-040	1-3/4"	DN40	-50°C~+150°C	≤10MPa	450	992
MDCM1-050	2"	DN50	-50°C~+150°C	≤10MPa	650	1433

Model	Nominal diameter		Medium temp.	Max.W.P	Max. flow-rate	
	inch	mm			kg/min	Lb/min
MDCM1-080	3"	DN80	-50°C~+150°C	≤6.3MPa	2000	4409
MDCM1-100	4"	DN100	-50°C~+150°C	≤4MPa	3000	6613
MDCM1-150	6"	DN150	-50°C~+150°C	≤4MPa	12000	26455
MDCM1-200	8"	DN200	-50°C~+150°C	≤4MPa	18000	39683
MDCM1-250	10"	DN250	-50°C~+150°C	≤4MPa	29000	63934

Overall Dimension

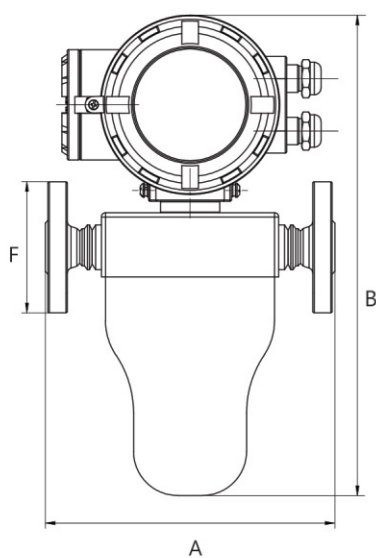
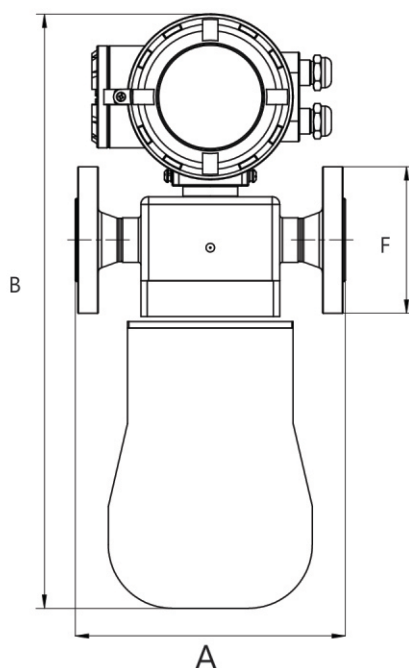
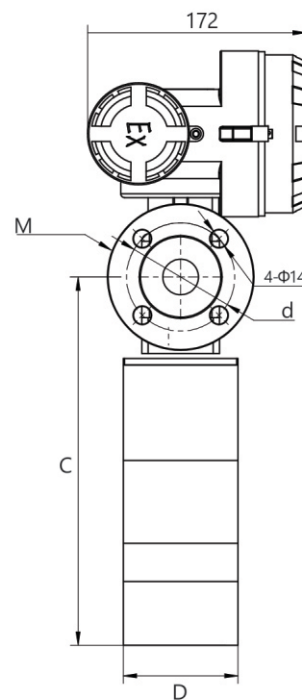
(unit : mm)

Model:MDCM1-001/MDCM1-002



Overall Dimension

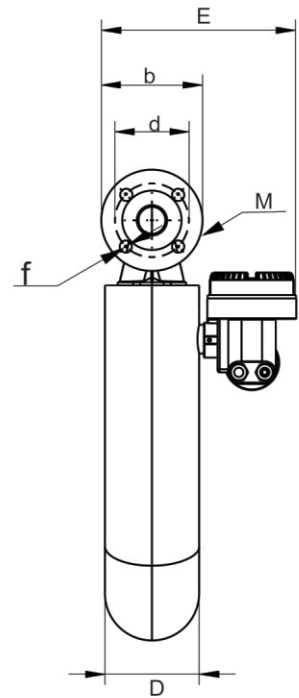
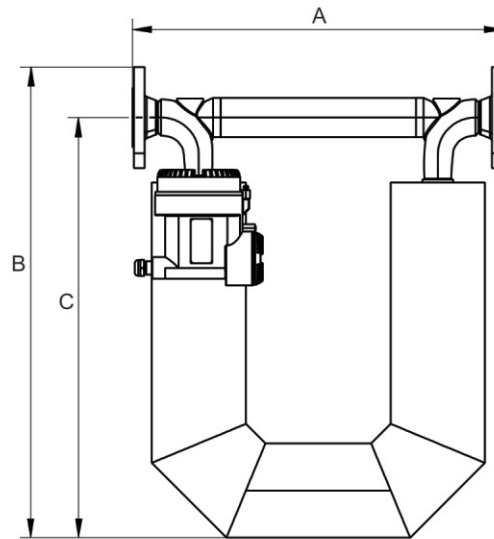
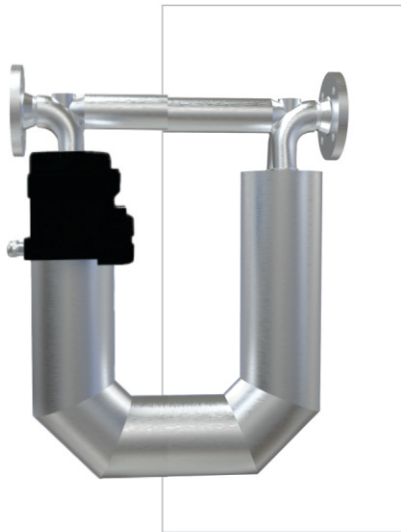
(unit : mm)

 Model:MDCM1-003/MDCM1-004/MDCM1-008/MDCM1-015
 MDCM1-020/MDCM1-025

U1

U2


Type	Model	A	B	F	C	D	d	M
U1	MDCM1-003	210	325	95	156.50	54	Φ65	NPT1/4" Female thread
	MDCM1-004	210	325	95	156.50	54	Φ65	NPT1/4" Female thread
	MDCM1-008	210	325	95	156.50	54	Φ65	HG/T 20592 DN15 PN40 Flange
	MDCM1-015	210	348	95	180	54	Φ65	HG/T 20592 DN15 PN40 Flange
U2	MDCM1-020	212	458	115	289	90	Φ85	HG/T 20592 DN20 PN40 Flange
	MDCM1-025	212	458	115	289	90	Φ85	HG/T 20592 DN25 PN40 Flange

Overall Dimension

(unit : mm)

 Model:MDCM1-040/MDCM1-050/MDCM1-080/MDCM1-100
 MDCM1-150/MDCM1-200/MDCM1-250


Model	A	B	C	D	E	d	b	f	M
MDCM1-040	552	699	624	Φ140	288	4-Φ18	Φ110	Φ150	HG/T 20592 DN40 PN40 Flange
MDCM1-050	600	747	665	Φ159	305	4-Φ18	Φ125	Φ165	HG/T 20592 DN50 PN40 Flange
MDCM1-080	763	950	850	Φ219	353	8-Φ18	Φ160	Φ200	HG/T 20592 DN80 PN40 Flange
MDCM1-100	963	1079	962	Φ273	416	8-Φ22	Φ190	Φ235	HG/T 20592 DN100 PN40 Flange
MDCM1-150	1164	1144	994	Φ324	467	8-Φ26	Φ250	Φ300	HG/T 20592 DN150 PN40 Flange
MDCM1-200	1266	1445	1257	Φ377	423	12-Φ30	Φ320	Φ375	HG/T 20592 DN200 PN40 Flange
MDCM1-250	1360	1904	1683	Φ448	500	12-Φ30	Φ385	Φ450	HG/T 20592 DN40 PN40 Flange

Straight tube series

- Nominal diameters(mm):DN08,DN15,DN25,DN40,DN50.
- Integrated design, small size, easy installation.
- Measurement independent of medium characteristics.
- Hygienic design in accordance with 3A certification.
- CIP/SIP cleaning available to ensure product quality.
- Robust housing (aluminium or stainless steel).

Application

Mass flow meters designed for precise metering and process control in the filling sector.

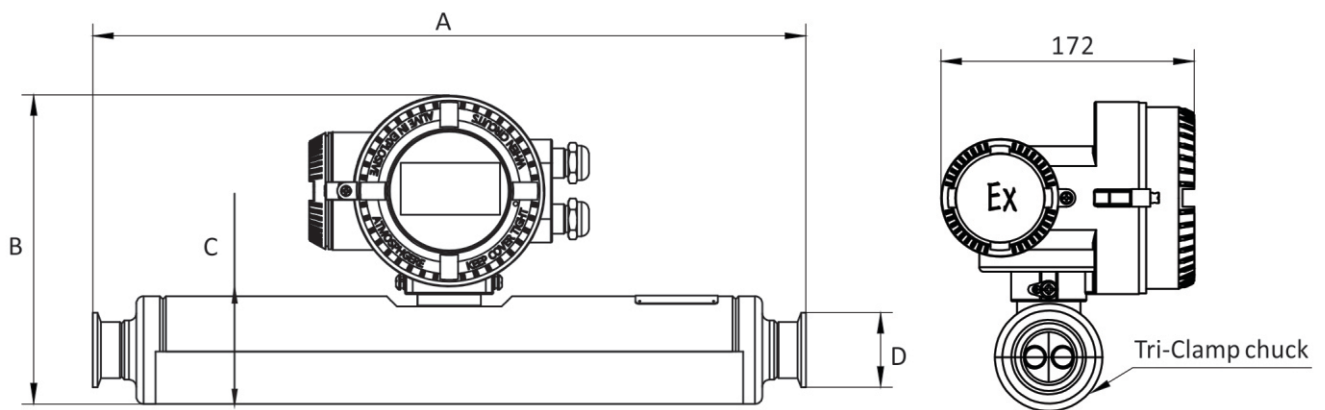
Model and Diameter

Model	Nominal diameter		Medium temp.	Max. flow-rate	
	inch	mm		kg/min	Lb/min
MDCM1-008	1/4"	DN08	-50°C~+150°C	20	44
MDCM1-015	1/2"	DN15	-50°C~+150°C	60	132
MDCM1-025	1"	DN25	-50°C~+150°C	200	440
MDCM1-040	1-1/2"	DN40	-50°C~+150°C	450	992
MDCM1-050	2"	DN50	-50°C~+150°C	650	1433

Overall Dimension

(unit : mm)

Model:MDCM1-008/MDCM1-015/MDCM1-025/MDCM1-040/MDCM1-050



Model	A	B	C	D
MDCM1-008	382	207	Φ73	Φ50.5
MDCM1-015	382	207	Φ73	Φ50.5
MDCM1-025	483	209	Φ73	Φ50.5
MDCM1-040	750	260	Φ125	Φ91
MDCM1-050	750	260	Φ125	Φ91

Micro bend tube series

Nominal diameter (mm): DN08,DN15,DN25,DN40,DN50,DN80,DN100.

Good anti-interference performance against power frequency interference.

Good zero stability and minimal pressure loss.

Application

It is suitable for trade handover and process control of loading and unloading materials in petrochemical, metallurgical, electric power, paper making, semiconductor, etc.

Model and Diameter

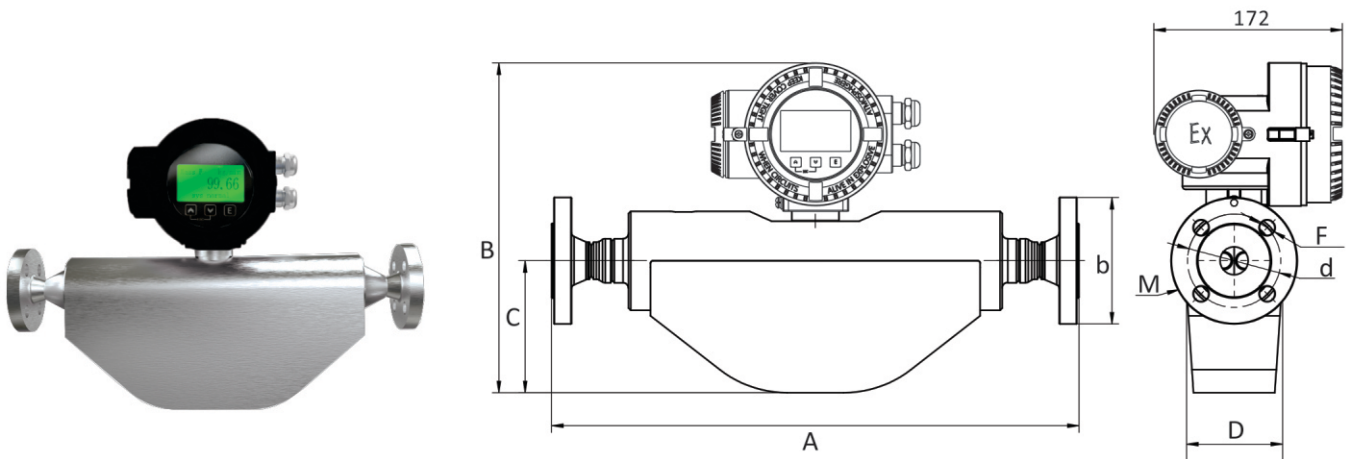
Model	Nominal diameter		Medium temp.	Max.W.P	Max. flow-rate	
	inch	mm			kg/min	Lb/min
MDCM1-008	1/4"	DN08	-50°C~+150°C	≤10MPa	20	44
MDCM1-015	1/2"	DN15	-50°C~+150°C	≤10MPa	60	132
MDCM1-025	1"	DN25	-50°C~+150°C	≤10MPa	200	440
MDCM1-040	1-3/4"	DN40	-50°C~+150°C	≤10MPa	450	992
MDCM1-050	2"	DN50	-50°C~+150°C	≤10MPa	650	1433
MDCM1-080	3"	DN80	-50°C~+150°C	≤6.3MPa	2000	4409
MDCM1-100	4"	DN100	-50°C~+150°C	≤4MPa	3000	6613

Overall Dimension

(unit : mm)

Model:MDCM1-008/MDCM1-015/MDCM1-025/MDCM1-40

MDCM1-050/MDCM1-080/MDCM1-100



Model	A	B	C	D	F	d	b	M
MDCM1-008	390	270	100	70	4-Φ14	Φ65	Φ95	HG/T 20592 DN15 PN40 Flange
MDCM1-015	390	270	100	70	4-Φ14	Φ65	Φ95	HG/T 20592 DN15 PN40 Flange
MDCM1-025	480	300	120	90	4-Φ14	Φ85	Φ115	HG/T 20592 DN25 PN40 Flange
MDCM1-040	816	401	200	125	4-Φ18	Φ110	Φ150	HG/T 20592 DN40 PN40 Flange
MDCM1-050	816	401	200	125	4-Φ16	Φ125	Φ165	HG/T 20592 DN50 PN40 Flange
MDCM1-080	954	567	300	170	8-Φ18	Φ160	Φ200	HG/T 20592 DN80 PN40 Flange
MDCM1-100	1111	552	292	292	8-Φ22	Φ190	Φ235	HG/T 20592 DN100 PN40 Flange

**MDCM 1 Coriolis Mass Flow meter**

ORDERING CODE	Example: MDCM 1	001	F	D	L	B1	L	A	U	N	D	I	T1	P8	N
Nominal Diameter please see the diameter selection table															
Please specify		001													
Process Connection															
F - Flange			F												
S - Sanitary															
W - Screw															
O - Other															
Flang Type															
D - DIN Please specify PN				40											
A - ASME Please specify class															
C - Customer															
Converter - Indicator															
L - Local indication					L										
W - Wall - Mounting box converter - Indicator															
Body Material															
B1 - Carbon steel						B1									
B2 - 304 Stainless steel															
B3 - 316 Stainless steel															
Wet Part Material															
L - 316L Stainless steel							L								
H - Hastelloy C															
B - Hastelloy B															
T - Titanium															
A - Tantalum															
M - Monel															
P - Pt / Iridium alloy															
O - Other															
Accuracy															
A - 0.2%								A							
B - 0.1%															
C - 0.05%															
Out Put															
N - Not required															
U - 4 ~ 20 mA. Frequency / pulse									U						
M - Modbus RS485															
Digital Communication															
N - No Communication										N					
M - Modbus RS485															
H - Hart															
F - Foundation fieldbus															
P - Profibus DP/PA															
G - GPRS															
Power Supply															
A - 85 ~ 250 VAC															
D - 20 ~ 36 VDC														D	
B - Battery power															
Z - Dual power (battery and 24 VDC)															
Protection Grade															
I - IP 65														I	
P - IP 68															
E - Intrinsically safe (II 1/2 Ex ia IIC T4/T5)															
F - Explosion-proof (II 1/2 Exia/d IIC T5/T6)															
Temperature Rating															
T1 - (-50...150°C)														T1	
T2 - (-50...250°C)															
T3 - (-50...350°C)															
T4 - (-200...150°C)															
Pressure Rating:														P8	
Please specify															
Infrared Remote Control															N
N - Not required															
R - Required															



MDCM1 Coriolis Mass Flow meter

ORDERING CODE

Example:

W3 NOTE

Options

CC - Calibration certificate

CM - Material Traceability certification

CP - Hydrostatic testing with certificate

CL - Cleaning for special service

CR - special calibrated range (please specify the range)

NH - Stainless steel tag wired to case

AT - ATEX

W3 - 3 year warranty

W3

W5 - 5 year warranty

Other

■ PLEASE SUPPLY THE FOLLOWING INFORMATION WHEN YOU INQUIRE.

(Fill in the form below to the extent possible. Further details will be finalized in later consultation.)

- Fill in the blanks. Tick the boxes ☐ that apply.

1. Sensor unit	CA	
2. Process fluid	Name: _____ SP. gr : _____ Viscosity : _____ Concentration : _____ %	
3. Flow range	Maximum _____ Normal _____ Full scale _____	☐ kg/h ☐ Others _____
4. Fluid temperature	Maximum _____ °C Normal _____ °C	Min. _____ °C
5. Operating pressure	Maximum _____ MPa Normal _____ MPa	Min. _____ MPa
6. Ambient temperature	Maximum _____ °C Min. _____ °C	
7. Fluid flow direction	☐ Left→Right ☐ Right→Left ☐ Bottom→Top (☐ Top →Bottom)	
8. Nominal size	_____ mm or _____ inch	
9. Required accuracy	± _____ % of reading ± _____ % of full scale	
10. Process connection	☐ Flange connection (Flange rating) ☐ Ferrule connection ☐ Screw connection	
11. Explosion proof	☐ Not required ☐ TIIS ☐ ATEX ☐ IECEx ☐ KCS ☐ CSA ☐ EAC ☐ NEPSI ☐ ITRI	
12. Power supply	V ☐ AC ☐ DC	
13. Output specifications	Pulse output	☐ Volt. pulse: [0]: 1.5V [1]: 13VDC min. Out. impedance: 2.2kΩ
		☐ Open drain output (equivalent to open collector output) [Min.10V to Maximum 30V, 50mADC, ON resistance 0.6Ω or less]
		☐ Output frequency: Any point from 0.1 to 10000Hz at full scale
		Two outputs from flow rate (mass or volume).
	Analog output	4 to 20mADC Maximum load: 500Ω
		2 outputs from instant. flow rate (mass, volume), temp. or density (option)
	Additional damping	0 to 200s. (variable)
	Alarm output	Slug flow High _____ g/mL Low _____ g/mL
14. Communication protocol	☐ HART ☐ FOUNDATION fieldbus ☐ PROFIBUS ☐ Modbus)	
15. Transmission length	Sensor unit (_____) m Transmitter (_____) m	
16. Receiver	☐ Totalizer ☐ Indicator ☐ Recorder ☐ Flow controller ☐ Batch controller ☐ Density computer ☐ Computer ☐ Others	
17. Dedicated cable length	In case of Remote-mount type _____ m	
18. In case of separate type transmitter	☐ Stanchion type w/bracket and 2" U bolt	
19. No. of units required		
20. Application		
21. Other considerations		
22. Cable gland	☐ Standard ☐ ATEX directive compliant ☐ ATEX directive compliant for earthed cable	
23. Maritime certification		





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